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No. XVIII.

TRUSS FOR RAISING A SUNKEN FLOOR.

The LARGE SILVER MEDAL was presented this session to Mr. F. RICHMAN, Great Pulteney-street, for his method of RAISING A SUNKEN FLOOR. The following communication has been received from him on the subject; and a model of his invention has been placed in the Society's repository.

IN consequence of the removal of a framed trussed partition, in order to throw two rooms into one, it was found that, part of the support being thus taken away, the beams had swagged in the middle of the floor about five inches, and the floor had become very tremulous, so as to be utterly unfit to bear a billiard-table, which was the original motive for removing the partition.

The cieling and cornice of the room below being valuable it became an object of consideration to apply some mode of relieving the timbers from above, which was successfully effected by Mr. Richman in the following way.

Having removed the floor, he applied to each side of the swagged beam an arch of cast-iron, the span of which was equal to the length and the height or spring to the depth of the beam. A chord of bar-iron unites the two ends of the arch, and prevents them from spreading. Four equidistant transverse holes were cut in the beam, nearer the bottom than the top, through each of which was

passed a bar, having its ends resting on the two opposite arches. An upright bar, or truss-iron, screwed at top, is secured to each end of the transverse bars; these uprights are somewhat higher than the beam, and each opposite pair is coupled by a flat bar with two eyes or holes, which admit the screwed ends of the uprights; a nut is then put upon each screw, and it is obvious that, by screwing down the nut, the curved part of the beam will be raised till it becomes level.

Fig. 1 is the plan or bird's-eye view of a trussed girder, showing the flat bars lying across the top of the beam, and coupling together each pair of screwed upright pieces.

Fig. 2 is an elevation, showing the arch with its chord and upright, and the beam behind them.

Circumstances did not admit of the arch or chord being made in one piece; and the manner in which the several parts were connected together being not capable of description by mere words, the following figures will, it is hoped, elucidate this part of the subject.

Fig. 3 represents the right hand end of fig. 2 on a larger scale. *a* Is the abutment-plate, of which fig. 10 is a plan, and fig. 11 a sectional elevation. In the upper holes in fig. 10 are inserted two bolts, which, passing through the beam, enter into the corresponding holes of the opposite abutment-plate, and are secured by nuts, as shown in fig. 3. *b*, fig. 3, Is one of the cast-iron pieces that compose the arch; the end by which it rests against the abutment-plate is rounded, as shown fig. 8, (fig. 9 being a sectional elevation of the same). The other end of this piece, and both ends of all the other pieces, (except the terminal one, which is similar to *b*), is as shown in fig. 5, which is a side view, and in fig. 6, which is a bird's-eye view.

c, fig. 3, Is one of the end pieces of the chord; the broad part of it is shown fig. 15, and the sectional elevation fig. 16 shows the extremity of it bent up at right angles to the other part. Being laid on the abutment-plate, as shown fig. 3, it is secured by two screwed bolts, which, like the upper bolts of the same plate, pass through the beam to the abutment-plate on the other side. The other end of the chord piece is formed into a kind of shallow hook, and joins the next piece in succession, as shown fig. 14, the joint being secured by a metal cap or ferrule *e*, fig. 3, drawn over it. Figs. 12 and 13 show the figure of all the chord pieces except the two end ones.

Fig. 4 is a section of the beam and truss, to show the insertion of the transverse bars *f*; these bars are notched at the ends (figs. 17 and 18) for the reception of the two uprights *d d*, fig. 4: a square end, like a nail head, prevents these uprights from being drawn through the notches in *f*. The junction of two of the arch pieces forms a cylindrical cavity, (seen in transverse section, fig. 7), through which the upright *d*, fig. 3, passes; a box or square collar is put over the screwed end of the upright, and then the nut, the action of which is to raise the upright, and with it the transverse bar, and thus to straighten the swagged beam, the arch *b* forming the point of support, and being itself prevented from yielding by the tie or chord of bar-iron *c*.

SIR, 35, Great Pulteney-street, May 11, 1824.

ACCORDING to promise I send you a description of my trussed girder, as follows:

The merits of the invention, according to my opinion, are—

First, that the expense of wood patterns is so trifling as to be of very little consequence.

Secondly, that all the iron work is in very small handy pieces, and therefore easily carried to the place where required, up stairs or ladders; and also very easily applied to its proper place.

Thirdly, that the abutment is produced by an iron tie or chord line bar, which renders it impossible to fail, if the iron is good, and so sound as to prevent any trembling of the floor. And,

Fourthly, which is the principal thing aimed at, it is a certain method of restoring a floor to its original straight line, however much it might have swagged, without the least damage whatever to the cieling, which has been proved in its application to the floor mentioned in my former letter.

I am, Sir,

&c. &c. &c.

A. Aikin, Esq.

Secretary, &c. &c.

F. RICHMAN.